

**Hon. R. James Woolsey,**

**National Commission on Energy Policy**

**Testimony Before the U.S. House of Representatives**

**Committee on Government Reform**

**Subcommittee on Energy and Resources**

April 6, 2005

Rayburn Office Building (Room B-349-C)

Good afternoon, Chairman Issa and Members of the Committee. My thanks to you for holding this hearing on a matter of great importance for our country: The nexus between America's energy needs and our national security.

I am one of the members of the National Commission on Energy Policy. By way of identification I am a former Director of Central Intelligence and am currently a Vice President of Booz Allen Hamilton. The Commission is an independent bi-partisan group of 16 persons who came together in 2002 with support from the Hewlett Foundation and several other leading foundations: The MacArthur Foundation, Packard Foundation, and the Pew Charitable Trusts. The Commission released a report at the end of last year entitled *Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges*.

The first Chapter of this report is about enhancing oil security. The placement of oil security first among all issues reflects the Commission's view that improving our nation's oil security is the most significant near term energy challenge we face. I'm pleased to have an opportunity to summarize the Commission's recommendations on this subject, as well as some of my own.

## **Rationale For Action**

It is my personal opinion that there are at least seven major reasons why dependence on petroleum for the lion's share of the world's transportation fuel creates special dangers in our time.

- 1. The Current Transportation Infrastructure is Committed to Oil and Oil-Compatible Products.** This fact substantially increases the difficulty of responding to oil price increases or disruptions in supply by substituting other fuels. Moreover, it leads to the conclusion that to have an impact on our vulnerabilities within the next decade or two, any new types of vehicles and any fuel that would compete with products derived from conventional oil for the transportation fuel market will need to be compatible with the existing energy infrastructure and require only modest additions or amendments to it. The time and cost required to make substantial changes in the infrastructure and the urgent need for reduction in reliance on conventional oil together suggest support for two approaches: (a) increasing fuel efficiency using currently available technologies that are compatible with the existing infrastructure, such as gasoline-electric hybrid vehicles (and “plug-in” hybrids) rather than fuel-cell vehicles, and (b) utilizing alternative fuels that are affordable, available now or in the very near future, and can be used within the existing infrastructure – e.g. cellulosic ethanol and compatible biodiesel fuel rather than hydrogen.
- 2. The Greater Middle East Will Continue to be the Low-Cost and Dominant Petroleum Producer for the Foreseeable Future.** Home of around two-thirds of the world's proven reserves of conventional oil -- 45% of it in just Saudi Arabia, Iraq, and Iran -- the Greater Middle East will inevitably have to meet a growing percentage of increasing world oil demand. For the foreseeable future, as long as vehicular transportation is dominated by oil as

it is today, the Greater Middle East, and especially Saudi Arabia, will remain in the driver's seat.

- 3. The Petroleum Infrastructure is Highly Vulnerable to Terrorist and Other Attack.** The Islamist movement, pre-eminently al Qaeda, has on a number of occasions explicitly called for world-wide attacks on the petroleum infrastructure and has carried some out in the Greater Middle East. Successful hits on major refineries, oil pipelines, or sulfur-cleaning towers could send oil prices much higher than even today's elevated prices.
- 4. The Possibility Exists, Particularly Under Regimes That Could Come to Power in the Greater Middle East, of Embargoes or Other Disruptions of Supply.** It is often said that whoever governs the oil-rich nations of the Greater Middle East will need to sell their oil. This is, however, not true if the rulers choose to try to live, for most purposes, in the seventh century. There was a serious Islamist coup attempt in Saudi Arabia in 1979 and bin Laden has advocated, for example, major reductions in oil production.
- 5. Wealth Transfers From Oil Have Been Used, and Continue to be Used, to Fund Terrorism and Its ideological Support.** Some \$85-90 billion has been spent by the Saudis in the last 30 years spreading Wahhabi beliefs throughout the world. Some oil-rich families of the Greater Middle East, further, fund terrorist groups directly. The Wahhabi doctrine – fanatically hostile to Shi'ite and Suffi and many other Muslims, Jews, Christians, women, modernity, and much else – plays a role with respect to Islamist terrorist groups similar to that played in the decades after WW I with respect to Nazism by angry German nationalism. Not all angry German nationalists became Nazis and not all those educated in the Wahhabi tradition become terrorists. But in each case the broader movement has provided the soil in which the fully totalitarian movement has grown. Whether in lectures in the madrassahs of Pakistan, in the textbooks printed by Wahhabis for Indonesian schoolchildren, or on the bookshelves of mosques in the US, the hatred spread by the Wahhabis, supported by private oil wealth and by the Saudi government as well, is evident.

- 6. The Current Account Deficits for a Number of Countries Create Risks Ranging from Major World Economic Disruption to Deepening Poverty and Could be Substantially Reduced by Reducing Oil Imports.** The US, in essence, borrows about \$13 billion per week, principally now from major Asian states, to finance its consumption. Oil is an extremely large category of imports; more than \$2 billion per week of this borrowing is used to import it. This degree of borrowing and the accumulated debt increases the risk of a flight from the dollar or major increases in interest rates. Any such development could have major negative economic consequences for both the US and its trading partners. For developing nations the debt they incur to import oil acts as a major drag on their ability to emerge from national poverty.
- 7. Global Warming Gas Emissions From Man-made Source Create at Least the Risk of Climate Change.** Although the point is not universally accepted, the weight of scientific opinion suggests that global warming gases (GWG) produced by human activity are one important component of potential climate change. Efforts to reduce oil use will also provide benefits to help mitigate the impacts of climate change.

While the Commission recommended stronger U.S. action to increase global oil production, and I support this recommendation strongly, I will direct my remarks today to the Commission's proposals to reduce U.S. oil consumption through enhanced vehicle fuel economy and increased production of non-petroleum transportation fuels.

### **I. The Importance of Strengthening Fuel Economy Standards**

During its deliberations, the Commission considered a variety of both major and minor transportation policy measures. These included many of the usual suspects: a gasoline tax, a CAFE increase, alternative fuels, as well as some new ideas: heavy-duty tractor trailer fuel economy, efficiency standards for replacement tires, congestion charges in urban areas. We examined these policy measures against four criteria: (1) the ability of each individual policy

measure to save one million barrels per day of oil by 2025, (2) the cost per barrel of oil saved, (3) administrative complexity, and (4) political feasibility. Of all the policies reviewed by the Commission, passenger vehicle fuel economy improvements represented the largest opportunity for oil savings over the next 20 years.

Accordingly, the Commission recommended that Congress instruct the National Highway Traffic Safety Administration (NHTSA) to significantly strengthen CAFE standards, giving due consideration to vehicle performance, safety, job impacts, and competitiveness concerns consistent with statutory requirements. We recommended that new standards be phased in over a five-year period beginning no later than 2010. The Commission did not reach agreement on a specific increase in fuel economy (although in a concurring note I recommended a 10-20 mpg improvement; 10 mpg would still leave us well short of current fleet mileages for both the EU and Japan).

Of course, it would be naïve to make recommendations about a CAFE increase without considering how to break the current political stalemate on fuel economy standards. The Commission identified three issues that have dominated past debates about raising CAFE standards and which we believe are largely responsible for the current stalemate: (1) uncertainty over impacts on the competitiveness of domestic manufacturers; (2) fear that more stringent standards will lead to smaller, lighter vehicles and increased traffic fatalities; and (3) concerns that higher standards will lead to losses in domestic jobs.

### **Competitiveness and U.S Jobs**

To address concerns about competitiveness impacts on U.S. domestic manufacturers and U.S. auto workers, the Commission recommends that a significant increase in CAFE standards be accompanied by reforms to the current program that would increase compliance flexibility and reduce compliance costs,

together with manufacturer incentives designed to promote the domestic manufacture of hybrid-electric and advanced diesel vehicles.

Specifically, the Commission recommends that the current program be altered to allow manufacturers to trade compliance credits with one another and across their car and light truck fleets. The Congressional Budget Office has estimated that this reform alone would reduce the cost of the CAFE program by about 17 percent. An additional reform that should be considered in concert with higher standards is a cost-capping mechanism similar to the “safety valve” the Commission is recommending in connection with a tradable permits system for greenhouse gas emissions. In this case, the government could make additional CAFE compliance credits available to manufacturers at a pre-determined price. Such a mechanism would have the effect of protecting automakers and consumers if the regulatory estimates used to set new standards understate true costs and thus holds promise for overcoming the inevitable and inherently irresolvable disagreements about future technology development that have stymied past CAFE debates.

With respect to manufacturer incentives, the Commission is specifically recommending a program of tax incentives for U.S manufacturing facilities that are re-tooled to produce hybrid-electric and advanced diesel vehicle with superior fuel economy. Consistent with international trade agreements, the incentive would be available to both domestic and foreign companies, including both assembly plants and parts supplies. The recommended subsidy level would total \$1.5 billion over ten years, with the amount of credit set to reflect up to 50 percent of the capital investment associated with producing vehicles or vehicle components. Commission analysis indicates that federal outlays under such a program would be more than offset by increased tax receipts as a result of maintaining domestic manufacturing jobs.

### **Relationship between Safety and Fuel Economy**

A paramount concern for us when seeking to improve vehicle fuel economy has been to ensure that there is no reduction in overall vehicle safety. The concern often expressed is that mandating higher fuel economy will require production of less safe, lighter vehicles and compromise vehicle performance. Our Commission considered this concern and tested it against currently marketed hybrid and passenger diesel vehicles. Hybrids and clean diesels offer the potential to boost fuel economy while maintaining vehicle size and performance. The Ford Escape hybrid, Honda Civic hybrid, the Honda Accord hybrid, and the forthcoming Toyota Highlander hybrid, all have conventional counterparts – all achieve substantial fuel economy improvements *while maintaining or increasing* horsepower (by as much as 17 percent) compared to their conventional counterparts, and without reductions in weight or size. These vehicles clearly demonstrate that substantial fuel economy improvements can be achieved using already-available technologies and without compromising vehicle performance and safety.

I would add that the Rocky Mountain Institute has recently published a report, “Winning the Oil End Game” which emphasizes the promise of using in automobile construction less expensive versions of the very strong carbon composites now used in aircraft construction – a step that could further contribute to our having vehicles that are lighter and substantially more fuel efficient but also stronger and safer than existing vehicles.

Finally, the Commission noted the potential importance of adding a “plug-in” feature to hybrid vehicles. Adding such a feature to hybrids would, without interfering with the hybrid’s ability to operate without grid electricity, give car owners the option of plugging the vehicle’s batteries in when convenient, such as at night, and storing enough power to drive several miles without using gasoline at all. In their fascinating new book on energy ([The Bottomless Well](#)) Messrs Huber and Fall point out that with today’s nickel-metal-hydride batteries trips of around 6 miles are possible for plug-ins without using liquid fuel at all and that with lithium batteries in the future 20-mile trips should be feasible before the

vehicle would need to use any liquid fuel. From the point of view of consumers, as Huber and Fall point out, average residential electricity costs are 8.5 cents/kwh in the US and in many areas off-peak power is sold at night for 2-4 cents/kwh. Two-cent- per-kilowatt-hour electricity equates approximately to 12-cent-per-gallon gasoline. This extraordinarily low cost is probably the reason individuals are beginning to modify their hybrids themselves to add a plug-in feature (see “Hybrid-Car Tinkerers Scoff at No-Plug-In Rule”, NYT Mar. 31, 2005, p. B-1). I have also met with Mr. Roger Duncan, deputy general manager of Austin Energy (a utility owned by the city of Austin, Texas) who is seeking to assemble a group of utilities to agree to give \$1000 credits to purchasers of plug-in hybrids, in order to be able to sell power at off-peak hours.

## **II. Non-Petroleum Transportation Fuels**

The Commission seeks to encourage development of a suite of domestically produced transportation fuels that can collectively help to diminish U.S. vulnerability to high oil prices and oil supply disruptions while reducing the transportation sector’s greenhouse gas emissions. Those non-petroleum fuels that are compatible with existing infrastructure and vehicle technology enjoy a significant advantage over those that require a wholly new distribution system or vehicle fleet. Two prominent examples are ethanol, preferably from cellulosic biomass, and biodiesel.

### **Alternatives to Gasoline for the Passenger Vehicle Fleet**

Among the variety of alternative fuel options potentially available for the light-duty vehicle fleet, the Commission believes that ethanol produced from cellulosic biomass (i.e. fibrous or woody plant materials) should be the focus of near-term federal research, development, and demonstration efforts. Cellulosic ethanol offers substantial energy security, environmental, and long-term cost advantages compared to corn-based ethanol. Indeed, Commission-sponsored analysis indicates that with steady though unremarkable progress to reduce production



costs and increase crop yields, cellulosic ethanol has the potential to make a meaningful contribution to the nation's transportation fuel supply over the next two to three decades.

I would add that cellulosic ethanol requires very little fuel input for its production: as Senator Lugar and I wrote in an article in Foreign Affairs over 6 years ago ("The New Petroleum") it takes only about a gallon of oil to produce seven of cellulosic ethanol, whereas for corn-based ethanol (because of the petroleum products required for cultivation, fertilization, etc.) it takes about seven gallons of oil to produce eight of ethanol. Indeed the Commission found that the cultivation and use of cellulosic ethanol requires so little fuel (and releases, net, such a small amount of global warming gases) that when cellulosic residues are used to co-generate electricity the total fuel cycle for cellulosic ethanol makes possible a reduction in global warming gas generation of more than 100 per cent compared to the use of gasoline. Using cellulosic ethanol for vehicles can thus in some cases be a carbon sink.

These advantages of cellulosic ethanol are what underlay my statement in September of 2002 in Commentary ("Defeating the Oil Weapon") that: "[u]sing 85 percent [cellulosic] ethanol, a full-sized hybrid passenger car that gets 40 mpg would be realizing the equivalent of about 250 mpg of gasoline." (Actually 160 mpg would have represented a better calculation in this case.) Recent restatements this year of this sort of comparison by Mr. Gal Luft of the Institute for the Analysis of Global Security (IAGS), and columnists Fareed Zakaria in Newsweek and Thomas Friedman in the NY Times have come under fire from commentators such as Mr. Alan Reynolds ("Blowing Smoke on Gas Savings", Wash. Times, Ap. 3, 2005) because of the alleged energy requirements of ethanol production. Mr. Reynolds clearly does not understand the comparatively small amount of fuel required to produce cellulosic ethanol as the Commission has confirmed and as Senator Lugar and I described it six years ago.

### **Alternatives to Diesel for Heavy-Duty Trucks and Buses**

Just as cellulosic ethanol represents a more promising long-term alternative to gasoline than corn-based ethanol, newer technologies are emerging that can produce clean, low-sulfur synthetic diesel fuels from biomass or other organic materials. The Commission found promising technologies that can utilize a wide variety of organic wastes as feedstocks. One process in particular, known as thermal depolymerization, is now being demonstrated on a commercial-scale to produce lowsulfur diesel fuel from wastes generated by a turkey processing facility. This technology and other advanced bio-diesel options merit further research, development, and early deployment efforts. (I have reiterated with respect to thermal depolymerization only what the Commission found. This Committee should be aware that for some years I have been an adviser to the company that invented this process.)

### **Commission Recommendations**

The Commission proposes a ten-year, \$1.5 billion effort to reduce the costs of biomass and waste-derived fuel production through a combination of targeted support for research and development and incentives for pioneer commercial production facilities. The primary goal of this proposal is to bring the cost of cellulosic ethanol below that of corn-based ethanol and within striking distance of gasoline over the next two decades.

### **Conclusion**

Advanced technology vehicles, such as hybrids, plug-in hybrids, and clean diesels, and alternative fuels like cellulosic ethanol and biodiesel have the potential to change the game. They offer the uncompromised features of conventional vehicles while improving dramatically automobile fuel economy and reducing our dependence on oil. It should be national policy to foster early introduction on a significant scale of these vehicle technologies and non-

petroleum transportation fuels for they promise to make a major contribution to U.S. energy security.

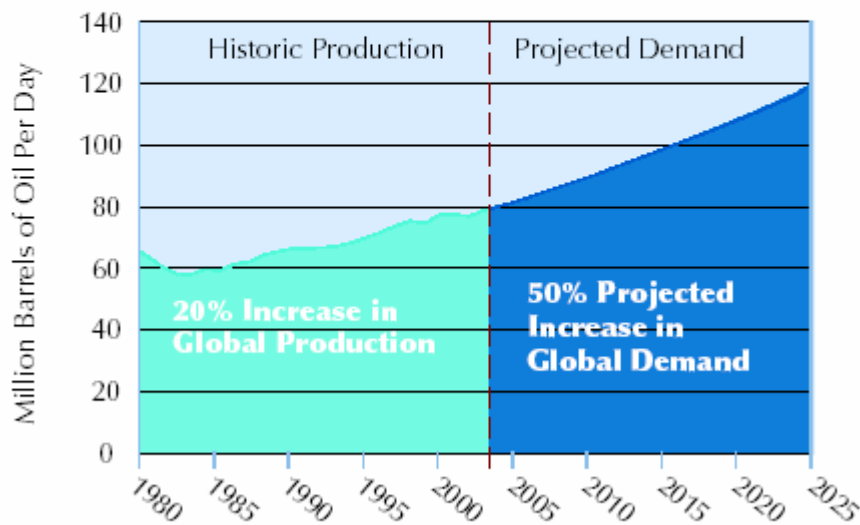
Figures from *Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges*, National Commission on Energy Policy (2005).

Figure 1-1

---

### Trends in Global Oil Production and Future Demand

Future demand for oil is projected to grow at more than double the historical rate since 1980.



Data Source: Energy Information Administration, 2004

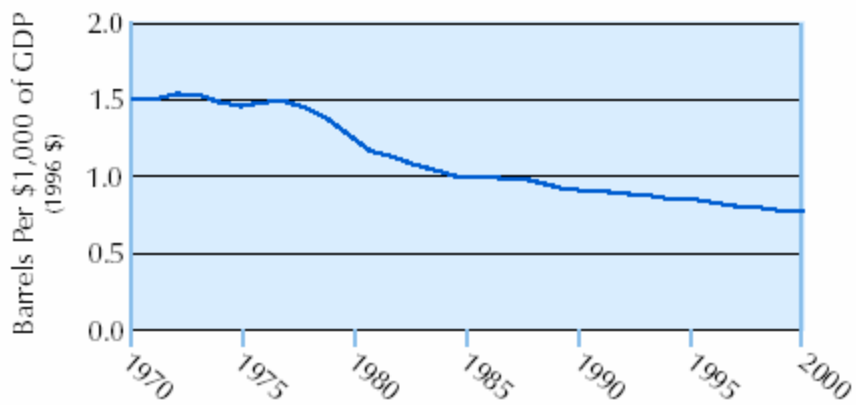
---

Figure 1-2

---

## Oil and the Economy

The ability of the U.S. economy to weather oil price shocks improves as oil's share of GDP decreases. This share has declined over the past several decades, although the rate of decline has slowed in recent years.



Resources for the Future, 2004

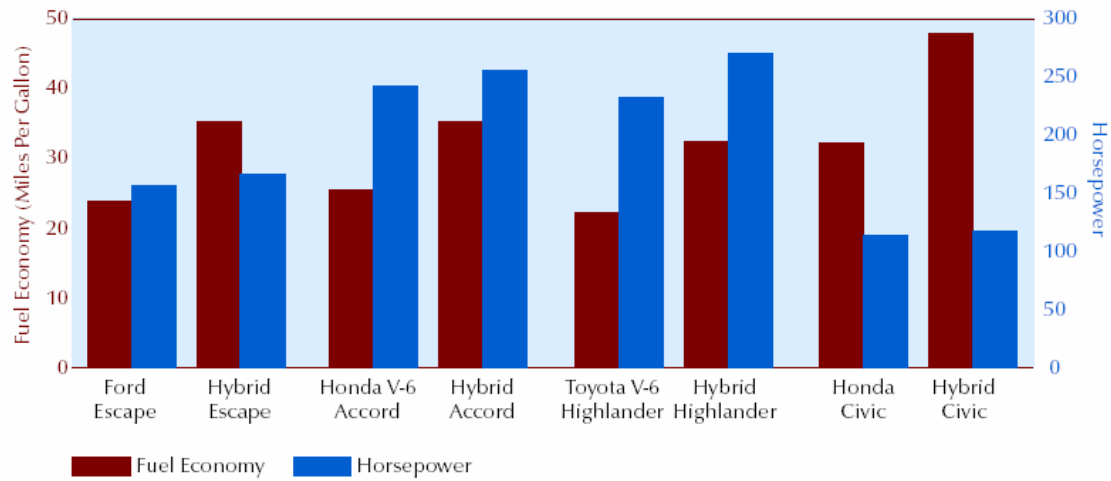
---

**Figure 1-3**

---

### Why Hybrids Change the Game

Hybrids can increase fuel economy and horsepower.



Note: The popular Toyota Prius hybrid is not included here because it does not have a conventional vehicle counterpart.

Data Sources: NewCars.com 2004, American Honda Motor Co. 2004, AIC Autosite 2004

---